

Document No. \_\_\_\_\_  
**DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL**  
**CHAPTER 61**

Statutory Authority: S.C. Code Section 48-1-10 et seq.

*R.61-62, Air Pollution Control Regulations and Standards*

**Preamble:**

On July 18, 1997, the United States Environmental Protection Agency (EPA) revised the National Ambient Air Quality Standard for ground-level ozone from 0.12 parts per million (ppm) 1-hour “peak” standard to 0.08 ppm 8-hour “average” standard. The National Ambient Air Quality Standards are health - based standards established at levels intended to protect public health. This “new” ozone standard is commonly referred to as the 8-hour ozone standard. Currently, all areas of South Carolina meet or “attain” all national ambient air quality standards, including the 1-hour ozone standard. However, when implemented, the 8-hour ozone standard could result in numerous areas of the state being determined not to meet the 8-hour standard and being designated as “non-attainment” for ground-level ozone. In South Carolina, 18 of 23 ozone monitors, particularly those in the more populated urban areas, regularly exceed the 8-hour standard. When air quality standards are revised, the state must recommend to EPA the boundaries of the areas that are not in compliance with the standard and must submit a plan to EPA that demonstrates how the state will bring those areas designated as non-attainment for the standard back into attainment. EPA will make the 8-hour ozone non-attainment designations by April 15, 2004, with input from the Department.

When EPA designates areas as non-attainment, these areas automatically become subject to additional permitting requirements referred to as non-attainment new source review and complex transportation planning requirements referred to as transportation conformity. In an effort to be proactive and bring cleaner air sooner to the citizens of South Carolina, the Department, with EPA support, has begun the process with state and local governments, industry, environmental groups, and other interested parties to consider possible ozone reduction strategies. The Department has been working with these stakeholder groups over the last year to develop strategies sooner than would be required by the current federal timeframes to reduce the pollution that creates ground-level ozone.

This strategy of bringing cleaner air to the state sooner than would be required under the current federal timeframes is referred to as the Early Action Compact or EAC. In accordance with the EAC, EPA has laid out specific milestones that the state must meet to reduce ozone precursors so that our ozone monitors will be attaining the 8-hour standard by 2007 and beyond. Aside from the public health benefits realized by meeting the new standard sooner than required, another reason for embarking on this approach is that if we are successful, EPA will defer the effective date of the non-attainment designations.

The purpose of the proposed regulations is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007 and to ensure that the Department is meeting the milestones specified by EPA for the EAC process. As part of the EAC process, the Department is proposing to promulgate a new regulation, R.61-62.5, Standard 5.2, *Control of Oxides of Nitrogen (NO<sub>x</sub>)*. In addition, the Department proposes to revise R.61-62.5, Standard 5.1, *Lowest Achievable Emission Rate (LAER) Applicable to Volatile Organic Compounds*, and R.61-62.2, *Prohibition of Open Burning*. Finally, the South Carolina State Implementation Plan (SIP) will be amended.

A Notice of Drafting was published in the *State Register* on August 23, 2002. A second notice extending the drafting comment period was published on April 25, 2003.

Discussion of Proposed Revisions:

## **SECTION CITATION: EXPLANATION OF CHANGE**

### **R.61-62.5, STANDARD 5.2, CONTROL OF OXIDES OF NITROGEN (NOX)**

A new regulation has been added.

### **R.61-62.5, STANDARD 5.1, LOWEST ACHIEVABLE EMISSION RATE (LAER) APPLICABLE TO VOLATILE ORGANIC COMPOUNDS**

Regulation title The title of the regulation has been changed to *Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) Applicable to Volatile Organic Compounds*.

Section I (A)(3) The definition of “actual emissions” has been revised.

Section I (C) A new definition has been added for “Best Available Control Technology (BACT).”

Section II (A) The paragraph has been revised to indicate that new construction permits issued after the effective date of this regulation shall apply BACT.

Section II (B) A new paragraph has been added to specify that, if the Department determines that the application of BACT/LAER controls would result in the emission of pollutants which might cause or significantly contribute to an exceedance of an ambient air quality standard, a lesser degree of control may be allowed.

### **R.61-62.2, PROHIBITION OF OPEN BURNING**

Section I (C) The paragraph has been revised to clarify that only clean wood products shall be used for fires set for human warmth.

Section I (D) The paragraph has been revised for clarity.

Section I (E) The paragraph has been renumbered and revised to stipulate that material to be burned must be generated onsite.

Section I (H) The paragraph has been renumbered and revised to specify that only permanent fire-fighter training facilities are exempt and that non-permanent locations must receive Department approval prior to any burning activity.

Section I (I) The paragraph allowing the burning of household trash on the premises of and originating from private residences has been deleted.

Section I (J) The paragraph allowing for burning of construction waste from building and construction operations has been deleted.

Section I (K) The paragraph has been revised for clarity.

**Notice of Staff Informational Forum:**

Staff of the Department of Health and Environmental Control invite interested persons of the public to attend a staff-conducted informational forum to be held on November 24, 2003, at 10:00 am in Room 2380 at the Department of Health and Environmental Control at 2600 Bull Street, Columbia, S.C. 29201.

Interested persons are also provided an opportunity to submit written comments to Heather Preston, Division of Air Planning, Development and Outreach, Bureau of Air Quality, 2600 Bull Street, Columbia, SC 29201. To be considered, written comments must be received no later than 5:00 pm on November 24, 2003. Comments received by the deadline will be submitted to the Board in a Summary of Public Comments and Department Responses.

Copies of the proposed regulation for public notice and comment may be obtained by contacting Heather Preston, Division of Air Planning, Development and Outreach, Bureau of Air Quality, 2600 Bull Street, Columbia, SC 29201.

Notice of Board Public Hearing and Opportunity for Public Comment Pursuant to S.C. Code Sections 1-23-111:

Interested members of the public and regulated community are invited to make oral or written comments on the proposed regulation at a public hearing to be conducted by the Board of Health and Environmental Control at its regularly-scheduled meeting on January 8, 2004, to be held in Room 3420 (Board Room) of the Commissioner's Suite, third floor, Aycock Building of the Department of Health and Environmental Control, 2600 Bull Street, Columbia, S.C. The Board meeting commences at 10:00 a.m. at which time the Board will consider items on its agenda in the order presented. The order of presentation for public hearings will be noted in the Board's agenda to be published by the Department 24 hours in advance of the meeting. Persons desiring to make oral comments at the hearing are asked to limit their statements to five minutes or less, and as a courtesy are asked to provide written copies of their presentation for the record.

Interested persons are also provided an opportunity to submit written comments on the proposed amendments by writing to Heather Preston, Division of Air Planning, Development and Outreach, Bureau of Air Quality, 2600 Bull Street, Columbia, SC 29201. To be considered, written comments must be received no later than 5:00 pm on November 24, 2003. Comments received shall be submitted to the Board in a Summary of Public Comments and Department Responses for consideration at the public hearing.

Copies of the proposed regulation for public notice and comment may be obtained by contacting Heather Preston, Division of Air Planning, Development and Outreach, Bureau of Air Quality, 2600 Bull Street, Columbia, SC 29201.

Preliminary Fiscal Impact Statement:

The proposed regulations will not result in any increased costs to the State or its political subdivisions. Existing staff and resources will be utilized to implement these amendments.

**Statement of Need and Reasonableness:**

This statement of need and reasonableness was determined by staff analysis pursuant to S.C. Code Section 1-23-115(C)(1)-(3) and (9)-(11).

**DESCRIPTION OF REGULATION:**

Purpose: On July 18, 1997, the United States Environmental Protection Agency (EPA) revised the National Ambient Air Quality Standard for ground-level ozone from 0.12 parts per million (ppm) 1-hour “peak” standard to 0.08 ppm 8-hour “average” standard. The National Ambient Air Quality Standards are health-based standards established at levels intended to protect public health. This “new” ozone standard is commonly referred to as the 8-hour ozone standard. Currently, all areas of South Carolina meet or “attain” all national ambient air quality standards, including the 1-hour ozone standard. However, when implemented, the 8-hour ozone standard could result in numerous areas of the state being determined not to meet the 8-hour standard and being designated as “non-attainment” for ground-level ozone. In South Carolina, 18 of 23 ozone monitors, particularly those in the more populated urban areas, regularly exceed the 8-hour standard. When air quality standards are revised, the state must recommend to EPA the boundaries of the areas that are not in compliance with the standard and must submit a plan to EPA that demonstrates how the state will bring those areas designated as non-attainment for the standard back into attainment. EPA will make the 8-hour ozone non-attainment designations by April 15, 2004, with input from the Department.

When EPA designates areas as non-attainment, these areas automatically become subject to additional permitting requirements referred to as non-attainment new source review and complex transportation planning requirements referred to as transportation conformity. In an effort to be proactive and bring cleaner air sooner to the citizens of South Carolina, the Department, with EPA support, has begun the process with state and local governments, industry, environmental groups, and other interested parties to consider possible ozone reduction strategies. The Department has been working with these stakeholder groups over the last year to develop strategies sooner than would be required by the current federal timeframes to reduce the pollution that creates ground-level ozone.

This strategy of bringing cleaner air to the state sooner than would be required under the current federal timeframes is referred to as the Early Action Compact or EAC. In accordance with the EAC, EPA has laid out specific milestones that the state must meet to reduce ozone precursors so that our ozone monitors will be attaining the 8-hour standard by 2007 and beyond. Aside from the public health benefits realized by meeting the new standard sooner than required, another reason for embarking on this approach is that if we are successful, EPA will defer the effective date of the non-attainment designations.

The purpose of the proposed regulations is to reduce or regulate the growth of ozone precursors so that the ozone monitors in the state are attaining the ozone standard in 2007 and to ensure that the Department is meeting the milestones specified by EPA for the EAC process. As part of the EAC process, the Department is proposing to promulgate a new regulation, R.61-62.5, Standard 5.2, *Control of Oxides of Nitrogen (NO<sub>x</sub>)*. In addition, the Department proposes to revise regulation 61-62.5, Standard 5.1, *Lowest Achievable Emission Rate (LAER) Applicable to Volatile Organic Compounds*, and regulation 61-62.2,

*Prohibition of Open Burning.* Finally, the South Carolina State Implementation Plan (SIP) will be amended.

Legal Authority: The legal authority for regulation 61-62 is Sections 48-1-10 et seq., S.C. Code of Laws.

Plan for Implementation: The proposed amendments will take effect upon approval by the General Assembly and publication in the *State Register*. The proposed amendments will be implemented by providing the regulated community with copies of the regulation.

#### DETERMINATION OF NEED AND REASONABLENESS OF THE PROPOSED REGULATION BASED ON ALL FACTORS HEREIN AND EXPECTED BENEFITS:

As the national air quality standards are health-based standards, it is important that efforts are made to improve air quality to meet these standards as soon as possible. Further, when non-attainment designations occur, areas automatically become subject to new additional permitting requirements and complex transportation planning requirements. These prescriptive federal requirements represent a one-size-fits-all approach to reducing ozone pollution. They are an economic burden for areas with a non-attainment designation and may not be the best strategy for reducing ozone pollution in South Carolina. Furthermore, this approach encourages sprawl by penalizing sources that locate in non-attainment areas. The EAC approach ensures that we bring cleaner air sooner to the state by meeting the new ozone standard sooner than required under the current federal timeframes. In addition to the public health benefits, under the EAC process, EPA will defer of the effective date of the non-attainment designations and thereby allow us the opportunity to develop strategies better suited to South Carolina's needs.

#### DETERMINATION OF COSTS AND BENEFITS:

The economic impacts associated with non-attainment are significant. When an area is designated as non-attainment, new sources, or existing facilities in need of major modifications, must install the Lowest Achievable Emission Rate (LAER) technology. LAER does not allow economic costs to be considered when determining what pollution controls are to be installed. Thus, if the controls are technically feasible, they must be installed regardless of the costs. Furthermore, pollution offsets are required in non-attainment areas and this is an additional cost to be considered.

As a result of the expenses involved, new facilities will choose not to locate in non-attainment areas and will choose instead to locate outside the non-attainment boundary. This approach encourages sprawl by providing incentives for sources to locate outside of non-attainment areas. It also puts certain areas of the state at a significant economic disadvantage. This inequity is further compounded by the fact that air pollution knows no boundaries and thus, facilities can locate outside of the non-attainment area and still have emissions that negatively impact the non-attainment area's air quality.

The EAC approach requires that our monitors attain the 8-hour standard sooner than the current federal timeframes. This translates into cleaner air sooner for our citizens. There are obvious public health benefits to be derived from this approach that are hard to quantify. In addition, the EAC approach allows us to design our own strategy for attaining the 8-hour standard. The primary focus of the regulations the Department is proposing is to control the growth of emission of oxides of nitrogen (NOx). Proposed Regulation 61-62.5, Standard 5.2, *Control of Oxides of Nitrogen (NOx)*, requires reasonable NOx controls on fuel combustion sources. This regulation will ensure uniform controls across the state rather than the current federal system that requires stringent controls in select areas. Thus, in terms of a cost/benefit analysis for this regulation, we need to compare the stringent LAER and offsets that would occur in select

areas of the state under a non-attainment designation with the more reasonable controls that would apply statewide as a result of these regulations. As an example of the cost differential, a new 125mmBTU/hr boiler under this regulation would be required to install low NOx burners capable of achieving 30 ppmv corrected to 3% O<sub>2</sub>. According to vendor information and other sources, this technology would cost about \$700 per ton of NOx reduced. If this same unit were installed in a non-attainment area, LAER for this unit would most likely be Selective Catalytic Reduction (SCR). A recent NESCAUM (The Northeast States for Coordinated Air Use Management) report estimates that the SCR on gas fired boilers is estimated to provide reductions for \$2,000/ton for boilers of about 350mmBTU/hr that operate at high capacity factors. This number jumps to around \$3,500/ton of NOx reduced for smaller, gas-fired boilers of a 100mmBTU/hr and this does not include the cost of offsets. Thus, it is evident that for non-attainment areas, the cost of controls under this regulation is significantly less than the costs would be if the area had a non-attainment designation.

Another regulation that the Department is revising in an effort to reduce NOx emissions statewide as part of the EAC process is Regulation 61-62.2, *Prohibition of Open Burning*. The most significant revisions to this regulation are as follows: deleting the exception for the burning of household trash, deleting the exception for the burning of construction waste, and revising the exception for fires set for the purpose of firefighter training. The burning of household trash and construction waste presents health and environmental concerns for many communities. The smoke generated from these activities is a nuisance to some and a health threat to others with asthma or other respiratory problems. Furthermore, the Department spends a lot of staff time and resources responding to complaints relating to these activities. The Department believes that deleting these exceptions from the regulation will not result in any significant cost or hardship because other disposal options for household trash and construction waste are readily available. Furthermore, most construction sites currently use other means of disposing of construction waste. The Department is also proposing to revise the exceptions for the purposes of firefighter training to ensure consistency and to ensure that minimum health, environmental and safety concerns are addressed. The Department will do a review of permanent firefighter training facilities and will evaluate non-permanent sites and require Department approval prior to a burn. The Department does not anticipate that this will result in any significant costs because existing firefighter training facilities will not be adversely impacted and non-permanent sites will still be allowed, but held to consistent standards. This revision allows the Department to collect information and to grant prior approval for firefighter training sites.

Finally, the Department is proposing to revise Regulation 61-62.5, Standard 5.1, *Lowest Achievable Emission Rate (LAER) Applicable to Volatile Organic Compounds*. This regulation is being revised to require Best Available Control Technology (BACT) to be applied to any new construction permit issued after effective date of this revision when the net VOC emissions increase exceeds 100 tons per year. As stated above, LAER requires very stringent pollution controls regardless of costs. This revision will require BACT controls on new construction that results in a net VOC emissions increase of greater than 100 tons per year. This is consistent with the Department's proposed regulation for controlling NOx emissions which requires reasonable NOx controls on fuel combustion sources. The Department believes that less costly VOC controls that will result from this revision will further offset the costs to the regulated community of the NOx controls that the Department is proposing with Regulation 61-62.5, Standard 5.2, while still being protective of the environment and public health.

#### UNCERTAINTIES OF ESTIMATES:

Proposed Regulation 61-62.5, Standard 5.2, *Control of Oxides of Nitrogen (NOx)*, requires reasonable NOx controls on new, as well as some existing, fuel combustion sources. The cost of NOx controls will

vary from source to source depending on size, fuel, and other factors. While the cost of this regulation will depend on the source in question, what is certain is that for sources locating in non-attainment areas, the costs will be far greater than the cost of the controls required by this regulation.

#### EFFECT ON ENVIRONMENT AND PUBLIC HEALTH:

The combination of these three regulations will have a positive impact on the environment and public health by reducing ozone pollution sooner than would be required under the federal timelines.

#### DETRIMENTAL EFFECT ON THE ENVIRONMENT AND PUBLIC HEALTH IF THE REGULATIONS ARE NOT IMPLEMENTED:

Ozone can irritate lung airways and cause inflammation much like a sunburn. Other symptoms include wheezing, coughing, pain when taking a deep breath, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people that are active outdoors can be affected when ozone levels are elevated. Repeated exposure to ozone pollution for several months may cause permanent lung damage. These regulations are designed to reduce ozone pollution sooner than would be required under the federal timelines. If these regulations are not implemented, the public health benefits will not be realized. Furthermore, if these regulations are not implemented, the state will fail to meet the EAC milestone and EPA will not defer the effective date of the non-attainment designations. This will encourage sprawl by providing incentives for sources to locate outside of non-attainment areas.

#### STATEMENT OF RATIONALE:

In accordance with S.C. Code Section 1-23-110(A)(3)(h), copies of a detailed statement of rationale may be obtained by contacting Heather Preston, Division of Air Planning, Development and Outreach, Bureau of Air Quality, 2600 Bull Street, Columbia, SC 29201.

#### **Text of Proposed Amendment for Public Comment:**

#### **New regulation 61-62.5, Standard 5.2 will be added to read:**

**SOUTH CAROLINA  
DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL  
AIR POLLUTION CONTROL REGULATIONS AND STANDARDS**

**REGULATION 61-62. 5  
AIR POLLUTION CONTROL STANDARDS**

**STANDARD NO. 5.2  
CONTROL OF OXIDES OF NITROGEN (NO<sub>x</sub>)**

#### **SECTION I - APPLICABILITY**

(a) Except as provided in paragraph (b) of this part, the provisions of this regulation shall apply to any stationary source that emits or has the potential to emit oxides of nitrogen (NO<sub>x</sub>) generated from fuel combustion that has not undergone a Best Available Control Technology (BACT) analysis for NO<sub>x</sub> in

accordance with SC Regulation 61-62.5, Standard No. 7 and that meets one or more of the criteria specified in paragraphs (a)(1), (a)(2), and (a)(3) of this part:

(1) Any new source that is permitted to construct after the effective date of this regulation;

(2) Any existing source where a burner assembly is replaced with another burner assembly after the effective date of this regulation, regardless of size or age of the burner assembly to be replaced. The replacement of individual components such as burner heads, nozzles, or windboxes does not trigger the applicability of this regulation; or

(3) Any existing source that is removed from its presently permitted site and moved to another site after the effective date of this regulation.

(b) Exemptions:

The following sources are exempt from all requirements of this regulation unless otherwise specified:

(1) Any source less than  $10 \times 10^6$  BTU/HR rated input capacity that burns a fuel.

(2) Emergency power generators of less than 150 KW rated capacity, or those that operate 250 hours per year or less and have a method to record the actual hours of use such as an hour meter.

(3) Any internal combustion engine with a mechanical power output of less than 200 bHP.

(4) Any device functioning solely as a combustion control device.

(5) Any equipment that has NO<sub>x</sub> controls pursuant to the requirements 40 CFR Parts 60, 61, or 63 where such controls are equivalent to, or more stringent than, the requirements of this regulation.

(6) Any source that has NO<sub>x</sub> controls pursuant to the requirements of SC Regulation 61-62.96, where such controls are equivalent to, or more stringent than, the requirements of this regulation.

(7) Any source that has NO<sub>x</sub> controls pursuant to the requirements of SC Regulation 61-62.99.

(8) Flares

(9) Air Curtain Incinerators

(10) Fuel Cell Sources

(11) Engines test cells/stands

(12) Portable and temporary IC engines such as those associated with generators, air compressors, or other applications provided that they fall in the categories listed in 40 CFR 89, *Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines*.

(13) Combustion sources that operate at a capacity of less than 10% per year.



(14) Special use burners, such as start-up/shut-down burners, that are operated less than 500 hours a year.

(15) Liquor guns on a recovery boiler are only exempt from the standard requirements in Section IV.

(16) Portable sources such as asphalt plants or concrete batch plants are only exempt from the standard requirements in Section III.

(17) The Department reserves the right to consider any other exemptions from this regulation on a case-by-case basis as appropriate.

## **SECTION II - DEFINITIONS**

For the purposes of this regulation, the following definitions shall apply:

**Burner Assembly:** Means any complete, pre-engineered device that combines air (or oxygen) and fuel in a controlled manner and admits this mixture into a combustion chamber in such a way as to ensure safe and efficient combustion.

**Case-by-Case NO<sub>x</sub> Control:** Means an emissions limitation based on the maximum degree of reduction for NO<sub>x</sub> which would be emitted from any new source which the Department, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source through application of production processes or available methods, systems, and techniques. In no event shall application of NO<sub>x</sub> control result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular source would make the impositions of an emission standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of NO<sub>x</sub> control. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means, which achieve equivalent results.

**Combustion Control Device:** Means, but is not limited to, any equipment that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere, excluding boilers, process heaters, dryers, furnaces, digesters, ovens, combustors, and similar combustion devices. Such equipment includes, but is not limited to, thermal oxidizers, catalytic oxidizers, and flares.

**Constructed:** Means the on-site fabrication, erection, or installation of the NO<sub>x</sub> emitting source.

**Fuel:** Means the following or any combination of the following: virgin fuel, fossil fuel, waste, waste fuel, biomass fuel, biofuel, methanol, ethanol, biodiesel, landfill gas, digester gas, process liquid or gas, or any combustible material the Department determines to be a fuel.

**Source:** Means a NO<sub>x</sub> emission unit.

**Tune-up:** Means adjustments made to the combustion process to optimize combustion efficiency of the source in accordance with procedures provided by the manufacturer or in accordance with good engineering practices.

### SECTION III – STANDARD REQUIREMENTS FOR NEW SOURCES

(a) Those sources as defined in Section I (a)(1) and (a)(3) shall apply NO<sub>x</sub> controls capable of achieving the limitations provided in Table 1 of this section. Unless otherwise noted, all emission limits identified in Table 1 are based on monthly averages.

(b) A source may request an alternate control limitation by submitting a demonstration that the alternate limitation is a Case-by-Case NO<sub>x</sub> Control as defined in Section II.

(c) The Department reserves the right to request that the owner or operator submit additional information for those sources that request alternate control limitation in accordance with Section III (b) above.

(d) Sources required to install post combustion technology for the control of NO<sub>x</sub>, shall be required to use post combustion for the control of NO<sub>x</sub> during the ozone season (April 1 through October 31).

**Table 1 - NO<sub>x</sub> Control Standards**

Source Type	Control Technology and/or Emission Limit
<b>Boilers and Water Heaters</b>	
Natural Gas Fired Boilers	
≥10mmBTU/hr and < 100mmBTU/hr	Low NO <sub>x</sub> Burners or equivalent technology capable of achieving 30ppmv @ 3% O <sub>2</sub> Dry (0.036 lb/mmBTU)
≥100mmBTU/hr	Low NO <sub>x</sub> Burners + Flue Gas Recirculation or equivalent technology capable of achieving 30 ppmv @ 3% O <sub>2</sub> Dry (0.036 lb/mmBTU)
Distillate Oil Fired Boilers	
≥10mmBTU/hr and < 100mmBTU/hr	Low NO <sub>x</sub> Burners or equivalent technology capable of achieving 0.15 lb/mmBTU
≥100mmBTU/hr	Low NO <sub>x</sub> Burners + Flue Gas Recirculation or equivalent technology capable of achieving 0.14 lb/mmBTU
<b>Residual Oil Fired Boilers</b>	
≥10mmBTU/hr and < 100mmBTU/hr	Low NO <sub>x</sub> Burners or equivalent technology capable of achieving 0.3 lb/mmBTU
≥100mmBTU/hr	Low NO <sub>x</sub> Burners + Flue Gas Recirculation or equivalent

	technology capable of achieving 0.3 lb/mmBTU
<b>Multiple Fuel Boilers</b>	The emission limits for boilers burning multiple fuels are calculated in accordance with the formulas below. Additional fuels shall be addressed on a case-by-case basis.
$\geq 10$ mmBTU/hr and $< 100$ mmBTU/hr	$E_n = [(0.036 \text{ lb/mmBTU } H_{np}) + (0.15 \text{ lb/mmBTU } H_{do}) + (0.3 \text{ lb/mmBTU } H_{ro}) + (0.35 \text{ lb/mmBTU } H_c) + (0.2 \text{ lb/mmBTU } H_w)] / (H_{np} + H_{do} + H_{ro} + H_c + H_w)$ <p>where:</p> <p><math>E_n</math> is the nitrogen oxides emission limit (expressed as NO<sub>2</sub>), ng/J (lb/million Btu)  <math>H_{go}</math> is the heat input from combustion of natural gas,  <math>H_{do}</math> is the heat input from combustion of distillate oil  <math>H_{ro}</math> is the heat input from combustion of residual oil,  <math>H_c</math> is the heat input from combustion of coal,  <math>H_w</math> is the heat input from combustion of wood residue.</p>
$\geq 100$ mmBTU/hr	$E_n = [(0.036 \text{ lb/mmBTU } H_{np}) + (0.14 \text{ lb/mmBTU } H_{do}) + (0.3 \text{ lb/mmBTU } H_{ro}) + (0.25 \text{ lb/mmBTU } H_c) + (0.2 \text{ lb/mmBTU } H_w)] / (H_{np} + H_{do} + H_{ro} + H_c + H_w)$ <p>where:</p> <p><math>E_n</math> is the nitrogen oxides emission limit (expressed as NO<sub>2</sub>), ng/J (lb/million Btu)  <math>H_{go}</math> is the heat input from combustion of natural gas,  <math>H_{do}</math> is the heat input from combustion of distillate oil  <math>H_{ro}</math> is the heat input from combustion of residual oil,  <math>H_c</math> is the heat input from combustion of coal.  <math>H_w</math> is the heat input from combustion of wood residue.</p>
<b>Wood Residue Boilers</b>	
All types	Combustion controls to minimize NOx emissions or equivalent technology capable of achieving 0.20 lb/mmBTU
<b>Coal Fired Stoker Fed Boilers</b>	
$< 250$ mmBTU/hr	Combustion controls to minimize NOx emissions or equivalent technology capable of achieving 0.35 lb/mmBTU
$\geq 250$ mmBTU/hr	Combustion controls to minimize NOx emissions or equivalent technology capable of achieving 0.25 lb/mmBTU

<b>Pulverized Coal Fired Boilers</b>	
< 250 mmBTU/hr	Low NOx Burners + Combustion controls to minimize NOx emissions or equivalent technology capable of achieving 0.35 lb/mmBTU
≥ 250 mmBTU/hr	Low NOx Burners + Combustion controls to minimize NOx emissions + SCR or equivalent technology capable of achieving 0.14 lb/mmBTU
<b>Municipal refuse fired boilers</b>	
< 250 mmBTU/hr	Combustion modifications to minimize NOx emissions + Flue Gas Recirculation or equivalent technology capable of achieving 200 ppmv @ 12% CO <sub>2</sub> (0.35 lb/mmBTU)
≥ 250 mmBTU/hr	Staged Combustion and Automatic Combustion Air Control + SCR or equivalent technology capable of achieving 0.18 lb/mmBTU
<b>Internal Combustion Engines</b>	
Compression Ignition	Timing Retard ≤ 4° + Turbocharger w/ Intercooler or equivalent technology capable of achieving 490 ppmv @ 15% O <sub>2</sub> (7.64 gm/bhp-hr)
Spark Ignition	Lean Burn Technology or equivalent technology capable of Achieving 1.0 gm/bhp-hr
Landfill or Digester Gas Fired	Lean Burn Technology or equivalent technology capable of Achieving 1.25 gm/bhp-hr
<b>Gas Turbines</b>	
Simple Cycle – Natural Gas	
< 50 Megawatts	Combustion Modifications (e.g. dry low-NOx combustors) to minimize NOx emissions or equivalent technology capable of achieving 25 ppmv @ 15% O <sub>2</sub> Dry (0.054 lb/mmBTU)
≥ 50 Megawatts	Combustion Modifications (e.g. dry low-NOx combustors) to minimize NOx emissions or equivalent technology capable of achieving 9.0 ppmv @ 15% O <sub>2</sub> Dry (0.033 lb/mmBTU)
Combined Cycle – Natural Gas	

< 50 Megawatts	Dry Low-NOx Combustors or equivalent technology capable of achieving 9.0 ppmv @ 15% O <sub>2</sub> Dry (0.033 lb/mmBTU)
≥ 50 Megawatts	Dry Low-NOx Combustors + SCR or equivalent technology Capable of achieving 3.0 ppmv @ 15% O <sub>2</sub> Dry (0.011 lb/mmBTU)
Simple Cycle – Distillate Oil Combustion	
< 50 Megawatts	Combustion Modifications and water injection to minimize NOx emissions or equivalent technology capable of achieving 42 ppmv @ 15% O <sub>2</sub> Dry Basis (0.16 lb/mmBTU)
≥ 50 Megawatts	Combustion Modifications and water injection to minimize NOx emissions or equivalent technology capable of achieving 42 ppmv @ 15% O <sub>2</sub> Dry Basis (0.16 lb/mmBTU)
Combined Cycle - Distillate oil combustion	
< 50 Megawatts	Dry Low-NOx Combustors with water injection, or equivalent technology capable of achieving 42 ppmv @ 15% O <sub>2</sub> Dry Basis (0.16 lb/mmBTU)
≥ 50 Megawatts	Dry Low-NOx Combustors, water injection, and SCR or Equivalent technology capable of achieving 10 ppmv @ 15% O <sub>2</sub> Dry Basis (0.038 lb/mmBTU)
Landfill Gas Fired	Water or steam injection or low NOx turbine design or equivalent technology capable of achieving 25 ppmv @ 15% O <sub>2</sub> (0.097 lb/mmBTU)
<b>Cement Kilns</b>	
All	Low NOx Burner or equivalent technology capable of achieving a 30% reduction from uncontrolled levels
<b>Fluidized Bed Combustion (FBC) Boiler:</b>	
Coal Fired	SNCR- Urea (Selective Noncatalytic Reduction - Urea) capable of achieving 51.8 ppm @ 3% oxygen (0.07 lbs/mmBTU)
Wood Fired	SNCR- Urea (Selective Noncatalytic Reduction - Urea) capable of achieving 51.8 ppm @ 3% oxygen (0.07 lbs/mmBTU)
<b>Recovery Furnaces</b>	
All	4 <sup>th</sup> level or air to recovery furnace/good combustion practices or

	equivalent technology capable of achieving 100 ppm @8% oxygen
<b>Lime Kilns</b>	
All	Combustion controls or equivalent technology capable of achieving 175 ppm @ 10% oxygen
<b>Fuel Combustion Sources Not Otherwise Specified:</b> (Examples include but are not limited to process heaters, dryers, furnaces, ovens, duct burners, incinerators, and smelters)	
<b>All</b>	Low NOx burners or equivalent technology capable of achieving 30% reduction from uncontrolled levels.

#### **SECTION IV - STANDARD REQUIREMENTS FOR EXISTING SOURCES**

(a) For those sources defined in Section I (a)(2) above where an existing burner assembly is replaced after the effective date of this regulation, the burner assembly shall be replaced with a low NOx burner assembly or equivalent technology capable of achieving a 30 percent reduction from uncontrolled NOx emission levels based upon manufacturer's specifications. An exemption from this requirement shall be granted when a single burner assembly is being replaced in a source with multiple burners due to non-routine maintenance.

(b) For those sources defined in Section I (a)(2) above where an existing burner assembly is replaced after the effective date of this regulation, the owner or operator shall notify and register the replacement with the Department in accordance with Section V below.

(c) A facility may request an alternative control methodology to the one specified in paragraph (a) of this section provided that they can demonstrate to the Department why the NOx control limits specified are not economically or technically feasible for this specific circumstance. The Department reserves the right to request that the owner or operator submit additional information as necessary for the alternative control methodology determination. Alternative control methodologies granted under this part are not effective until notification is submitted to and approved by the Department.

#### **SECTION V – NOTIFICATION REQUIREMENTS**

(a) Except for those sources that wish to request an alternative control methodology as specified in Section IV(c), the notification requirements specified in this section shall apply only to existing sources as defined in Section I(a)(2) above where an existing burner assembly is replaced after the effective date of this regulation.

(b) Within 7 days of replacing an existing burner assembly, the owner or operator shall submit written notification to register the replacement unit with the Department.

(c) Notification shall satisfy the permitting requirements consistent with SC Regulation 61-62.1, Section II (a).

(d) Notification shall contain replacement unit information as requested in the format provided by the Department. Replacement unit information shall include, at a minimum, all affected units at the source and the date the replacement unit(s) will commence operation.

(e) Those sources that wish to receive an emission reduction credit for the control device will be required to submit a permit application.

## **SECTION VI – TUNE-UP REQUIREMENTS**

(a) Owners or operators of a combustion source shall perform tune-ups every two years in accordance with manufacturer's specifications or with good engineering practices.

(b) All tune-up records are required to be maintained on site and available for inspection by the Department for a period of five years from the date generated.

(c) The facility shall develop and retain a tune-up plan on file.

**Regulation 61-62.5, Standard 5.1 will be revised in its entirety to read as follows:**

**SOUTH CAROLINA  
DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL  
AIR POLLUTION CONTROL REGULATIONS AND STANDARDS**

**REGULATION 61-62.5  
AIR POLLUTION CONTROL STANDARDS**

**STANDARD NO. 5.1**

**BEST AVAILABLE CONTROL TECHNOLOGY (BACT)/  
LOWEST ACHIEVABLE EMISSION RATE ("LAER")  
APPLICABLE TO VOLATILE ORGANIC COMPOUNDS**

## **SECTION I - DEFINITIONS**

A. "Net VOC Emissions Increase" means the amount by which the sum of the following exceeds zero:

1. Any actual increase in the emissions of VOCs from a particular physical change or change in method of operation at a plant; and

2. Any other increases and decreases in the actual VOC emissions at the plant that occurred at the plant since July 1, 1979, and are otherwise creditable. An increase or decrease is creditable only if the Department has not relied on it in issuing a permit for the plant under this Standard, which permit is in effect when the increase from the particular change occurs.

3. "Actual emissions" means the actual rate of emissions of a pollutant from an emissions unit, as determined in accordance with paragraphs (a) through (c) below.

(a) In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two-year period which preceded the particular date and which is representative of normal source operation. The Department may allow the use of a different time period upon a determination that it is more representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

(b) The Department may presume that source-specific allowable emissions for the unit are equivalent to the actual emissions of the unit.

(c) For any emissions unit which has not begun normal operations on the particular date, actual emissions shall equal the potential to emit of the unit on that date.

B. Lowest Achievable Emission Rate (LAER) means that rate of emissions based on the following, whichever is more stringent:

1. The most stringent emission limitation which is contained in the State Implementation Plan of any state for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable; or

2. The most stringent emission limitation which has been achieved in practice by such class or category of source.

In no event shall the application of LAER permit a proposed new or modified source to emit any pollutant in excess of the amount allowable under New Source Performance Standards if applicable.

C. Best Available Control Technology (BACT) means an emissions limitation based on the maximum degree of reduction for VOC which would be emitted from any proposed physical change or change in method of operation which the Department, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the impositions of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means, which achieve equivalent results.

## **SECTION II - GENERAL APPLICABILITY**

A. This standard shall apply to all new, modified, or altered sources that would increase emissions of Volatile Organic Compounds (VOC). Lowest Achievable Emission Rate shall be applied to construction or modifications permitted before (effective date published in *State Register*) when the net VOC emissions increase exceeds 100 tons per year. Best Available Control Technology shall be applied to



any new construction permit issued on or after (effective date published in the *State Register*) when the net VOC emissions increase exceeds 100 tons per year.

B. The Department may allow a lesser degree of control, provided that such a determination does not supersede any other State or Federal requirements, if the Department determines that the application of BACT/LAER controls would result in the emission of pollutants which might cause or significantly contribute to an exceedance of an ambient air quality standard.

### **SECTION III - VOLATILE ORGANIC COMPOUND COMPLIANCE TESTING**

The owner or operator of any volatile organic compound source required to comply with this Standard shall, at his own expense, conduct source tests in accordance with the provisions of R.61-62.1, Section IV, Source Tests, to demonstrate compliance unless the Department determines that the compliance status of the source can be monitored as described in Section IV, below.

If tests are required, the following conditions shall apply:

A. Test frequencies for VOC abatement equipment will be as follows:

1. every four (4) years for sources utilizing solvent recovery emission control devices (e.g. carbon adsorption, refrigeration). However, if fouling of the carbon bed is suspected in the case of carbon adsorption, more frequent test schedules can be required.

2. every two (2) years for sources utilizing catalytic incineration/destruction.

3. every four (4) years for sources utilizing flame incineration provided the source operates, calibrates, and maintains a recorder for each incinerator which continuously records the combustion zone temperature and such temperature is maintained at a value no less than that recorded during the last source test during which compliance was verified.

B. Testing of VOC capture systems will be performed annually. However, only an initial test will be required provided:

1. capture system flow rate indicators (e.g. magnehelic gauges, manometers) are operated, calibrated, and maintained, and

2. the indicated values are maintained at a level no less than that recorded during the last source test during which compliance was verified, and

3. the type and location of the flow rate indicators are approved by this Department, and

4. no process, capture system, or VOC abatement equipment modifications have been made.

C. Other sources will be placed on a two (2) year test cycle.

### **SECTION IV - RECORDKEEPING, REPORTING, MONITORING**

A. The owner or operator of any VOC emission source or control equipment shall maintain, as a minimum: records of all compliance testing conducted under Section III above, and records of all monitoring conducted under paragraphs C.1. and C.2. below.

B. The owner or operator of any applicable VOC emission source or control equipment shall, on request, make available to the Department, or U.S. EPA, reports detailing the nature, specific sources, and total quantities of all VOC emissions for any specified period. Records must be kept which are consistent with the compliance time frames for each source subject to this standard.

C. The owner or operator of any VOC emission source or control equipment shall:

1. install, operate, calibrate and maintain process and/or control equipment, monitoring instruments, or procedures as required to comply with paragraphs A. and B. above; and,

2. maintain, in writing, data and/or reports relating to monitoring instruments or procedures which shall, upon review, document the compliance status of the VOC emission source or control equipment to the satisfaction of the Department.

D. Copies of all records and reports under paragraphs A., B., and C. above, shall be retained by the owner or operator for two years after the date on which the record was made or the reports submitted.

E. Copies of all records and reports required under this Section shall be available for inspection during normal working hours and furthermore, copies of the required records and reports shall be furnished within ten working days after receipt of a written request from the Department.

**Regulation 61-62.2 will be revised in its entirety to read as follows:**

**SOUTH CAROLINA  
DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL**

**AIR POLLUTION CONTROL REGULATIONS AND STANDARDS**

**REGULATION 61-62.2  
PROHIBITION OF OPEN BURNING**

**OPEN BURNING IS PROHIBITED EXCEPT AS PROVIDED BELOW:**

**SECTION I - Exceptions**

A. Open burning of leaves, tree branches or yard trimmings originating on the premises of private residences and burned on those premises.

B. Open burning in connection with the preparation of food for immediate consumption.

C. Campfires and fires used solely for recreational purposes, ceremonial occasions, or human warmth. Fires set for the purpose of human warmth must use only clean wood products (woody vegetation, leaves, or wood which is not coated with stain, paint, glue or other coating material, and not treated lumber).

D. Fires purposely set in accordance with *Smoke Management Guidelines for Vegetative Debris Burning Operations in South Carolina*, administered by the South Carolina Forestry Commission and acceptable to the Department to include the following:

1. Prescribed burning of forest lands for specific management practices; and
2. Fires purposely set for agricultural control of diseases, weeds, pests, and for other specific agricultural purposes.
3. Open burning of trees, brush, grass and other vegetable matter for game management purposes.

E. Open burning in areas other than predominantly residential for the purpose of land clearing or right-of-way maintenance. This will be exempt only if the following minimum conditions are followed:

1. The location of the burning must be a sufficient distance but not less than 1000 feet, from public roadways and all residential, commercial, and industrial sites not a part of the contiguous property on which the burning is conducted.
2. Winds during the time of the burning must be away from any area in which the ambient air may be significantly affected by smoke from the burning if that area contains a public roadway or a residential, commercial, or industrial site.
3. The material to be burned must have been generated onsite and not moved to the site from another location;
4. The amount of dirt on the material being burned must be minimized;
5. No heavy oils, asphaltic materials, items containing natural or synthetic rubber, or any materials other than plant growth may be burned;
6. The initial burning must be started only between the hours of 9:00 a.m. and 3:00 p.m.; no combustible material may be added to the fire between 3:00 p.m. of one day and 9:00 a.m. the following day;
7. No more than two piles 30' x 30' or equivalent may be burned within a six-acre area at one time; and
8. In the case of land clearing, all salvageable timber and pulpwood must be removed.

F. Fires set for the purposes of training fire-fighting personnel and conducted at permanent fire-fighter training facilities. Prior Department approval is required in order to obtain the exemption as a permanently established training site. Fires set for the purpose of fire-fighter training at non-permanent locations must receive Department approval prior to the initiation of any burning activity. Materials used for fire-fighter training cannot contain asbestos, heavy oils, asphaltic material, plastic or rubber without express written consent from the Department.

G. Open burning, in remote or specified areas:

1. For non-recurring unusual circumstances.

2. For experimental burning for purposes of data gathering and research.

However, prior approval for these types of burning (in subparagraph G above) must be obtained from the Department.

## SECTION II - General

A. A written report or warning to a person of a violation at one site shall be considered adequate notice of the Regulation and subsequent observed violations at the same or different site will result in appropriate legal action.

B. Open burning may be conducted in certain situations if no undesirable levels are or will be created. The authority to conduct open burning under this Regulation does not exempt or excuse the person responsible for the burning from the consequences of or the damages or injuries resulting from the burning and does not exempt or excuse anyone from complying with other applicable laws and with ordinances, regulations, and orders of governmental entities having jurisdiction, even though the burning is otherwise conducted in compliance with this Regulation.

C. The Department reserves the right to impose other or different restrictions and exemptions on open burning in addition to those enumerated above, whenever in the judgment of the Department such is necessary to realize the purpose of this Regulation.